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A METHOD OF RECORDING EMBRYOLOGICAL MATERIAL,
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KANSAS UNIVERSITY SCIENCE BULLETIN.

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A METHOD OF RECORDING EMBRYOLOGICAL MATERIAL.

BY RICHARD E. SCAMMON.

THE cataloguing and arrangement of an embryological collection of any size offers a problem of some complexity. Such a collection made up of embryos, entire and sectioned, separate organs and fetal appendages, does not lend itself at once to a simple classification or an easy system of arrangement. In the method here presented an attempt has been made to avoid complexity as one extreme and incompleteness as the other. The system set forth below was worked out by the author, with suggestions from Dr. C. E. McClung and Mr. R. G. Hoskins for the growing collection of the University of Kansas. Thus far it has proved satisfactory, and rendered the collection far more available.

This method has for its aim three results: First, to give quickly accurate data concerning any specimen in the collection; second, to prevent the loss of specimens and slides from the collection; third, to systematically collect and preserve valuable observations concerning the material in the collection. The means used is a series of records kept on specially devised cards. The method of procedure is as follows: Material for class use and dissection or unprepared for the collection is merely kept in bottles with slips giving all known data. When a specimen is to be sectioned or otherwise prepared for the collection it is given an accession number. Two series of accession numbers are kept—one the ordinary series of numerals for entire embryos, whole or sectional; the other a series with a cipher before the first numeral (example, 025)

for separate organs and fetal appendages. This number is placed in the upper left-hand corner of such a card as is shown in figure 1.* On this card are recorded all known data.

As the process of preparation is carried out the data concerning it are added in the appropriate places. The space under the heading "Remarks" is used mainly for notes on the condition, age and peculiarities of the embryo, together with reference numbers. Should the embryo be kept entire, or merely dissected, it is placed in an exhibit jar bearing the same number as the card, and the words "Exhibit jar" are written in the space under "Containers" on the card. The gummed numbers made by the Tablet and Ticket Company

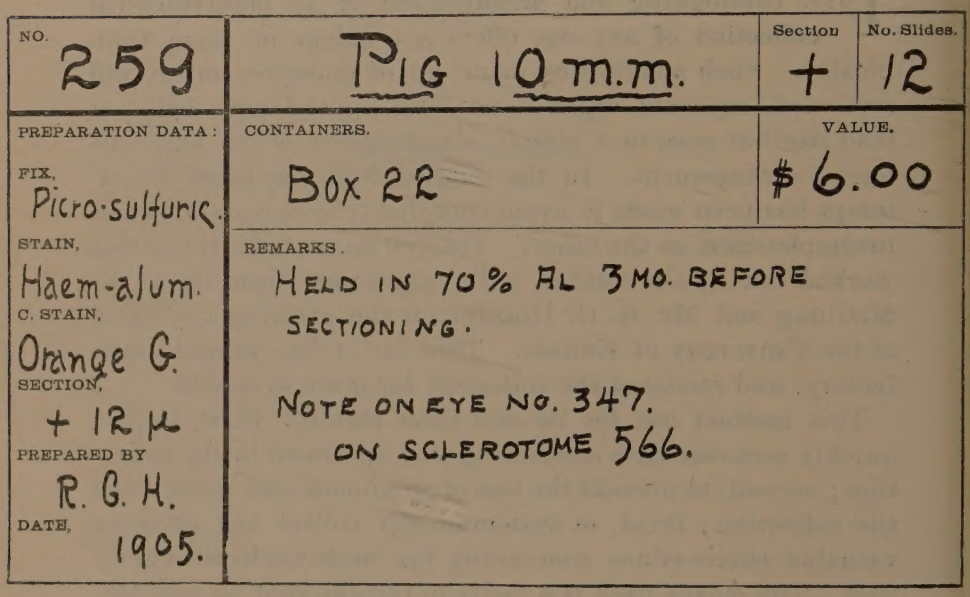


FIG. 1.

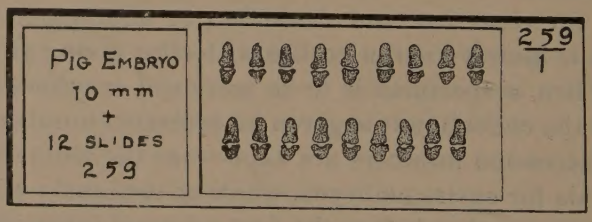


FIG. 2.

*One hypothetical case is followed through all the cards figured.

present a neat appearance, and have been found very satisfactory, not only for numbering museum jars, but slide boxes and carriers as well. They may be obtained in either black or red.

Should the embryo be sectioned, the slides upon which it is placed bear in the upper right-hand corner a fraction written with a diamond pencil (fig. 2). The upper number is the accession number of the embryo; the lower number indicates the position of the slide in the series of slides made from the particular embryo. This device, the credit for which belongs to Mr. R. G. Hoskins, former fellow to the department, insures the identity of each slide, and to a great extent prevents the loss of slides. The slides may also be labeled if desired. In this collection only the first slide of the series is labeled. The label is written in India ink on thin, tough paper, exactly the size of an ordinary square cover-glass, 22 mm. by 22 mm. This label is then soaked in creosote and mounted in balsam under a cover, in the same manner as a section might be. Such a label never fades or becomes detached from the slide, and is a great improvement over the old-fashioned paper label.

After experiments with a number of styles of containers, the boxes holding 100 slides and having about the dimensions of an ordinary quarto volume have been found the most satisfactory. Such containers are reasonable in price, and may be had of any of the well-known dealers in microscopical supplies. These boxes are serially numbered on the backs, and are placed on shelves, as books might be. A large card just fits into the lid of each box (fig. 3). This card is ruled off into three columns, in which are recorded the accession numbers, the number of slides, and a brief statement of the material of the sets contained in the box. Such cards are only slightly attached to the box lid, and may be removed if desired. The number of the box in which each set of slides is placed is noted, in pencil, in the "Container" space on the proper data card (see fig. 1). While no strict classification of the slides is attempted, because a slide may always be located from the data card, still a general classification of slides into large groups is possible, and will suffice for a long period without

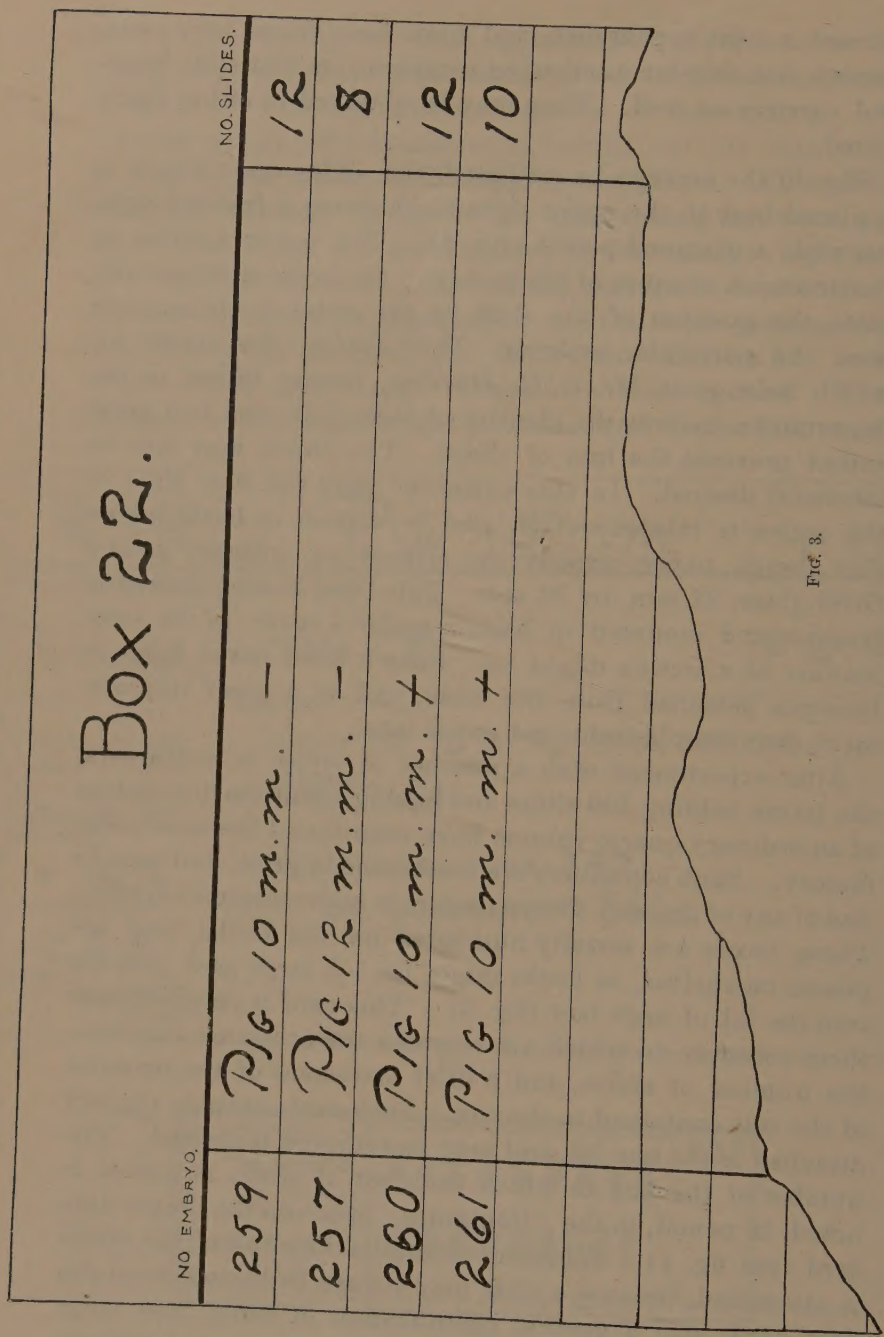

Box 22.
NO. EMBRYO.
NO. SLIDES.
259
Pig 10 m. m. —
12
257
Pig 12 m. m. —
8
260
Pig 10 m. m. +
12
261
Pig 10 m. m. +
10

FIG. 3.

readjustment. The boxes described above are the permanent receptacles for the collection of slides. When slides are issued for class use different styles of holders are employed. For single slides and small sets the pressed-cardboard containers manufactured by Theodore Schröter, of Leipzig, and carrying from four to six slides, are used. For larger sets, such, for example, as cross-sections of pig embryos, the improved whitewood boxes which hold twenty-five slides are quite satisfactory. Each container bears a number both on the box and on the lid. Upon issuing slides in a container a card such as is shown in figure 4 is made out. This gives the number of the container, the identification fraction of the slides therein, their value, and the box from which they were taken. It also bears the signature of the person or persons who may receive the container, together with the date and locker number. To fill out such a card takes but a moment, and after being signed it is held as a receipt until the material is returned. This system has stopped the loss of slides resulting from class use.

A separate set of cards is used for keeping a record of observations on the material in the collection. It is hoped that in the course of time this series of records will become of increasing value, not only as time-savers and in teaching, but also as aids to advanced work. To record such observations a special card such as is shown in figure 5 is used. A glance at the figure will explain it. The location readings are recorded in the right-hand column, and consist of the index fraction of the slide and the position of the section upon it. These cards are supplied to students sufficiently advanced to recognize phenomena of value, and are of material advantage to them in keeping an accurate record of their work. After being filled out, the cards are collected and classified according to the same general plan as are the literature cards in the *Concilium Bibliographicum*. The main divisions being:

Ovum.
Laminæ germinis et Embryo primordia.
Adnexa embryonis.
Histogenesis et Organogenesis.

NO. 35	from Box 22	VALUE $6.00
CONTAINING—	259.1 – 259.2 – 259.3 – 259.4.	

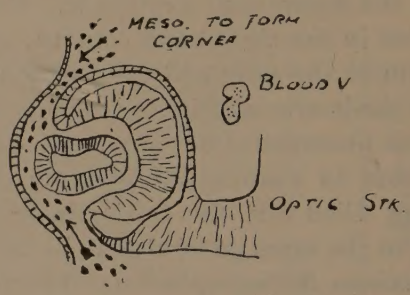
DATE.		NO.	GROUP
Oct. 25, 06	P.H. Green.	25	III
	The loss of one slide destroys half the value of the set.		

FIG. 4.

EMBRYO NO.	SYSTEM	STRUCTURE	CARD NO.
259		ORGANA SENSUM. ORGANON VISUS.	347
ANIMAL Pig +	STAGE 10 m.m.		

LOCATION: III 2, 3.

SHOWS FORMATION OF CORNEA + ECCENTRIC POSITION OF OPTIC STALK.



NOTED BY P.H. Green'd

FIG. 5.

Each of these main heads is subdivided. For the last and largest division, Barker's "Anatomical Terminology" (BNA) has been made use of as a general guide, although most of the minor headings have been omitted and the names of the more distinct embryonic structures have been interpolated where it seemed necessary. Thus the headings under heart (Cor), for example, are:

COR.
Epicardium.
Myocardium.
Endocardium.
Sinus veinosus.
Atria.
Ventricula.
Bulbus arteriosus.
Conus arteriosus.

Any other logical morphological classification would do as well. In order to classify the records according to the groups of animals, as well as the structures they represent, small celluloid riders which fasten on the upper edge of the card may be used, these riders to be of different colors—a color having been selected to represent each class of vertebrates; for example, red for Pisces and blue for Batrachia. It is only necessary to attach the properly tinted celluloid rider to each information card and an easy system of cross-indexing of notes is established.

When embryos are photographed, the plates are placed in envelopes bearing the photographic data and the number of the embryo. A specimen photograph is placed in a large scrap-book and the number and page are recorded on the original data card of the specimen.

DEPARTMENT OF ZOOLOGY,
UNIVERSITY OF KANSAS,
December 20, 1906.